

ABSTRACT

[059] Systems and methods are provided for the manipulation of a polarizable object with a pair of elongated nanoelectrodes using dielectrophoresis. The nanoelectrodes can be carbon nanotubes and are coupled with one or more time-varying voltage sources to create an electric field gradient in a gap between the nanotubes. The gradient induces the movement of a polarizable object in proximity with the field. The nanotube pair can be used to trap a single polarizable object in the gap. A method of fabricating a nanoelectrode dielectrophoretic system is also provided. Applications extend to self-fabricating nanoelectronics, nanomachines, nanochemistry and nanobiochemistry. A nanoelectrode dielectrophoretic system having an extended nanoelectrode for use in applications including the self-fabrication of a nanowire, as well as methods for fabricating the same, are also provided.